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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
UHLENHAKE, JASON S	
ART UNIT	PAPER NUMBER
2853	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/795,878	HUANG ET AL.	
	Examiner	Art Unit	
	Jason Uhlenhake	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 11, 15-16, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) in view of Tachihara et al (U.S. Pub. 2001/0043243).

Chen discloses:

- ***regarding claims 1, 11, 15-16, 18-19,*** a heating layer (24) on the substrate; a conductive layer (26) on the substrate, wherein the conductive layer conducts a current to the heating layer, and comprises a stepped portion used as a heating area, wherein the heating area is defined by the conductive layer and the heating layer (Figure 1; Column 1, Lines 29-43)

- a chamber (32) for storing liquid above the heating area, wherein the chamber includes a first side and a second side, the first side is overlapped with the heating area, the second side is connected to the first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side (Figure 1; Column 1, Lines 29-43)

Chen does not disclose expressly the following:

- ***regarding claims 1, 11, 16, 18-19,*** the porous material on the chamber so that the liquid flows into the chamber therethrough

Tachihara discloses:

- ***regarding claims 1, 11, 16, 18-19,*** the porous material on the chamber so that the liquid flows into the chamber therethrough (Abstract; Paragraph 0066), for the purpose of absorbing and holding ink in order to discharge ink droplets form the ejection head.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Tachihara into the device of Chen, for the purpose of absorbing and holding ink in order to discharge ink droplets form the ejection head.

Claims 2-3, 12, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) as modified by Tachihara et al (U.S. Pub. 2001/0043243) as applied to claim 1 above, and further in view of Park et al (U.S. Pat. 6,702,428).

Chen et al as modified by Tachihara discloses all of the claimed limitations except for the following:

- ***regarding claim 2,*** wherein the chamber is formed by light-sensitive polymer via exposure and developing

- ***regarding claim 3,*** wherein the light-sensitive polymer is a dry film or a liquid photoresist

- ***regarding claim 12,*** wherein the chamber is light-sensitive polymer

- ***regarding claim 17,*** wherein the adhesive layer comprises light-sensitive polymer

Park et al discloses:

- ***regarding claim 2,*** wherein the chamber is formed by light-sensitive polymer via exposure and developing (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination an improving ejection characteristics of the ink droplets.

- ***regarding claim 3,*** wherein the light-sensitive polymer is a dry film or a liquid photoresist (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets.

- ***regarding claim 12,*** wherein the chamber is light-sensitive polymer (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets.

- ***regarding claim 17,*** wherein the adhesive layer comprises light-sensitive polymer (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Park et al into the device of Chen et al as modified by Tachihara, for the purpose of preventing delamination and improving the ejection characteristics of the ink droplets.

Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) as modified by Tachihara et al (U.S. Pub. 2001/0043243) and Park et al (U.S. Pat. 6,702,428) as applied to claim 1 above, and further in view of Singh et al (U.S. Pat. 6,210,522).

Chen et al as modified by Park et al discloses:

- ***regarding claim 4,*** an adhesive layer for the porous material; a light-sensitive polymer (Park et al: Column 6, Lines 50 – 67; Column 7, Lines 1 – 24)

Chen et al as modified by Park et al does not disclose expressly the following:

- ***regarding claim 4,*** adhering materials by use of hot press

Singh et al discloses:

- ***regarding claim 4,*** adhering materials by use of hot press (Column 6, Lines 7 – 17), for the purpose of reducing or eliminating ink from wicking between the circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting.

At the time the invention was made it would have been obvious to a person skilled in the art to incorporate the teaching of Singh et al into the device of Chen et al as modified by Tachihara and Park et al, for the purpose of reducing or eliminating ink from wicking between the circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) as modified by Tachihara et al (U.S. Pub. 2001/0043243) as applied to claim 1 above, and further in view of Park et al (U.S. Pat. 6,702,428) and Song et al (U.S. Pub. 2004/0100535).

Chen does not disclose expressly the following:

- ***regarding claim 7,*** forming an adhesive layer on the chamber after forming the chamber
- ***regarding claim 5,*** wherein the chamber is formed by electroplating metal
- ***regarding claim 6,*** wherein the metal is Ni

Park discloses:

- ***regarding claim 7,*** forming an adhesive layer on the chamber after forming the chamber (Column 6, Lines 50 – 67; Column 7, Lines 1 – 24), for the purpose of preventing delamination an improving ejection characteristics of the ink droplets.

Song et al discloses:

- ***regarding claim 5,*** wherein the chamber is formed by electroplating metal (Paragraph 0032), for the purpose of having a high thermal conductivity and dissipate heat from the heater
- ***regarding claim 6,*** wherein the metal is Ni (Paragraph 0027), for the purpose of having a high thermal conductivity and dissipate heat from the heater

At the time the invention was made, it would have been obvious to a person skilled in the art to incorporate the teaching of Park and Song et al into the device of

Chen et al as modified by Tachihara, for the purpose of having a high thermal conductivity and dissipate heat from the heater

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) as modified by Tachihara et al (U.S. Pub. 2001/0043243), Park et al (U.S. Pat. 6,702,428) and Song et al (U.S. Pub. 2004/0100535) as applied to claim 1 above, and further in view of Murai et al (U.S. Pub. 2003/0227518).

Chen et al as modified by Tachihara, Park and Song discloses all of the claimed limitations except for the following:

- ***regarding claim 8,*** wherein the adhesive layer comprises metal with low melting point

Murai et al discloses:

- ***regarding claim 8,*** wherein the adhesive layer comprises metal with low melting point (Paragraph 0054), for the purpose of improving adhesion to the mounting surface.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of the adhesive layer comprises metal with low melting point as taught by Murai et al into the device of Chen et al as modified by Song et al, for the purpose of improving adhesion to the mounting surface.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) as modified by Tachihara et al (U.S. Pub. 2001/0043243), Park

et al (U.S. Pat. 6,702,428) and Song et al (U.S. Pub. 2004/0100535) as applied to claim 1 above, and further in view of Takeda et al (U.S. Pub. 2002/0054201).

Chen et al as modified by Tachihara, Park and Song discloses all of the claimed limitations except for the following:

- ***regarding claim 9,*** wherein the adhesive layer is formed by electroplating or screen printing

Takeda et al discloses:

- ***regarding claim 9,*** wherein the adhesive layer is formed by electroplating or screen printing (Paragraph 0185), for the purpose of to obtaining sufficient adhering force.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of the adhesive layer is formed by electroplating or screen printing as taught by Takeda et al into the device of Chen et al as modified by Tachihara, Park, and Song et al, for the purpose of obtaining sufficient adhering force.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) as modified by Tachihara et al (U.S. Pub. 2001/0043243), Park et al (U.S. Pat. 6,702,428) and Song et al (U.S. Pub. 2004/0100535) as applied to claim 1 above, and further in view of Singh et al (U.S. Pat. 6,210,522).

Chen as modified by Tahihara, Park and Song discloses:

- ***regarding claim 10,*** an adhesive layer for the porous material (Park et al: Column 6, Lines 50 – 67; Column 7, Lines 1 – 24)

Chen et al as modified by Tachihara, Park and Song discloses all of the claimed limitations except for the following:

- ***regarding claim 10,*** adhering materials by use of hot press

Singh et al discloses:

- ***regarding claim 10,*** adhering materials by use of hot press (Column 6, Lines 7 – 17), for the purpose of reducing or eliminating ink from wicking between the circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting.

At the time the invention was made it would have been obvious to a person skilled in the art to incorporate the teaching of adhering materials by use of hot press as taught by Singh et al into the device of Chen et al as modified by Tachihara, Park, and Song et al, for the purpose of reducing or eliminating ink from wicking between the circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting.

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,412,918) as modified by Tachihara et al (U.S. Pub. 2001/0043243), as applied to claim 11 above, and further in view of Song et al (U.S. Pub. 2004/0100535) and Park et al (U.S. Pat. 6,702,428)

Chen as modified by Tachihara does not disclose expressly:

- ***regarding claim 13,*** wherein the chamber is metal

- ***regarding claim 14,*** comprising and adhesive layer disposed between the chamber and the porous material

Song et al discloses:

- ***regarding claim 13,*** wherein the chamber is metal (Paragraph 0032), for the purpose of having a high thermal conductivity and dissipate heat from the heater

Park discloses:

- ***regarding claim 14,*** comprising and adhesive layer disposed between the chamber and the porous material (Column 6, Lines 50 – 67; Column 7, Lines 1 – 24), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets

At the time the invention was made, it would have been obvious to a person skilled in the art to incorporate the teaching of the chamber is metal as taught by Song et al into the device of Chen et al, for the purpose of having a high thermal conductivity and dissipate heat from the heater and preventing delamination and improving ejection characteristics of the ink droplets

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Uhlenhake whose telephone number is (571) 272-5916. The examiner can normally be reached on Monday-Friday 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSU
May 5, 2007

STEPHEN MEIER
SUPERVISORY PATENT EXAMINER